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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/921,233	08/01/2001	Christian Knopfle	60,500-072	6017

27305 7590 11/03/2008  
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EXAMINER
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PHILOGENE, PEDRO

ART UNIT	PAPER NUMBER
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3733

MAIL DATE	DELIVERY MODE
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11/03/2008

PAPER

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**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

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*Ex parte*  
CHRISTIAN KNOPFLE, KARL GREINER, THORSTEN  
FRANK, and HANS-URS ECKERLE

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Appeal 2008-4990  
Application 09/921,233  
Technology Center 3700

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Decided: November 3, 2008

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Before DEMETRA J. MILLS, RICHARD M. LEBOVITZ and JEFFREY N.  
FREDMAN, *Administrative Patent Judges*.

FREDMAN, *Administrative Patent Judge*.

**DECISION ON APPEAL**

This is an appeal under 35 U.S.C. § 134 involving claims to a self retaining implant, which the Examiner has rejected as obvious. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

### *Background*

“Within the framework of skull operations, bone covers . . . are often sawn out of the skull bone. At the end of the operation, it is necessary to fix these bone covers again in the resulting opening in the top of the skull, so that the bone cover can heal” (Spec. 1:17-21). According to the Specification, “[v]arious implants have been proposed for attaching bone covers or skull bone fragments” (Spec. 1:26-27). The Specification notes that “[i]n order to reduce the time outlay associated with the fixing of a bone cover, self-retaining implants have been proposed” (Spec. 1:37-2:2).

### *Statement of the Case*

#### *The Claims*

Claims 1, 5-6, 10-11, 29-31, 38-41, and 44 are on appeal. We will focus on claims 1, 5, and 44, which are representative and read as follows:

1. A self-retaining implant for attaching a bone cover or a bone fragment to a skull, the implant comprising:
  - a support element having an upper side and a lower side;
  - an extension extending substantially at a right angle from the lower side of the support element to an end remote from the support element and substantially straight between the support element and the end; and
  - at least one spike extending substantially parallel to the support element such that the spike can be driven laterally into the bone cover or bone fragment prior to positioning the bone cover or bone fragment adjacent to the skull,
- wherein the support element comprises two support arms extending in opposite directions from the extension with the first of the two support arms defining a screw hole therein for receiving a fastener to secure the first support arm to the skull after the spike has been driven laterally into

the bone cover or bone fragment and after positioning the bone cover or bone fragment adjacent to the skull and the second of the two support arms for cooperating with the bone cover or bone fragment when driving the spike laterally into the bone cover or bone fragment.

5. The implant according to Claim 1, wherein the lower side of the support element is concave or spherically curved at least in sections.

44. A method of attaching a bone cover or a bone fragment to a skull with a self-retaining implant comprising a support element having a lower side, an extension extending substantially at a right angle from the lower side of the support element to an end remote from the support element and substantially straight between the support element and the end, and at least one spike extending substantially parallel to the support element, wherein the support element includes two support arms extending in opposite directions from the extension with the first of the two support arms defining a screw hole therein for receiving a fastener and the second of the two support arms for cooperating with the bone cover or bone fragment, said method comprising the steps of:

- driving the spike laterally into the bone cover or bone fragment;

- positioning the bone cover or bone fragment adjacent to the skull after driving the spike laterally into the bone cover or bone fragment; and

- securing the first support arm to the skull after positioning the bone cover or bone fragment adjacent to the skull.

The Examiner relies on the following prior art references to show unpatentability:

Pohndorf et al	US 5,904,683	May 18, 1999
Manthrop et al.	US 5,916,217	Jun. 29, 1999
Hair	US 6,197,037 B1	Mar. 6, 2001

The rejections as presented by the Examiner are as follows:

- A. Claims 1, 6, 10, 11, 29-31, 38-41, and 44 stand rejected under 35 U.S.C. § 103(a) as being obvious over Manthrop (Ans. 3).
- B. Claim 5 stands rejected under 35 U.S.C. § 103(a) as being obvious over Manthrop and Hair (Ans. 4).
- C. Claims 10 and 11 stand rejected under 35 U.S.C. § 103(a) as being obvious over Manthrop, Hair, and Pohndorf (Ans. 5).

A. *35 U.S.C. § 103(a) rejection over Manthrop*

The Examiner contends that

Manthrop et al disclose a self-retaining implant for attaching a bone cover or a bone fragment to a skull, the implant (110) comprising a support element (112, 118) having an upper side and a lower side an extension (124) extending substantially at a right angle from the lower side of the support element to an end remote from the support element and substantially straight between the support element and the end; at least one spike (132) such that the spike can be driven laterally into the bone cover or bone fragment prior to positioning the bone cover or bone fragment adjacent to the skull

(Ans. 3).

Appellants argue that the “implant 110 does not include a spike extending **substantially parallel to the support element for driving**

**laterally into the bone flap 16 in combination with a screw hole in the skull clipping portion 118 for receiving a fastener to secure the skull clipping portion 118 to the skull** as required by claim 1” (App. Br. 6).

Appellants contend that “forming the burrs 132 at an angle of 90 degrees from the extension 124 would defeat the ‘snap-fit’ engagement of the burrs 132 in Manthrop et al” (*id.*)

In view of these conflicting positions, we frame the obviousness issue before us as follows:

Would the implant of claim 1 have been *prima facie* obvious to an ordinary practitioner based on the disclosure of Manthrop, more particularly whether Manthrop discloses a spike extending substantially parallel to the support element for driving laterally into the bone flap as required by claim 1?

*Findings of Fact (FF)*

1. Manthrop teaches a “cranial spring clip for attaching a bone flap to a skull” (Manthrop, abstract).
2. Manthrop discloses the clip in Figure 3, reproduced below:

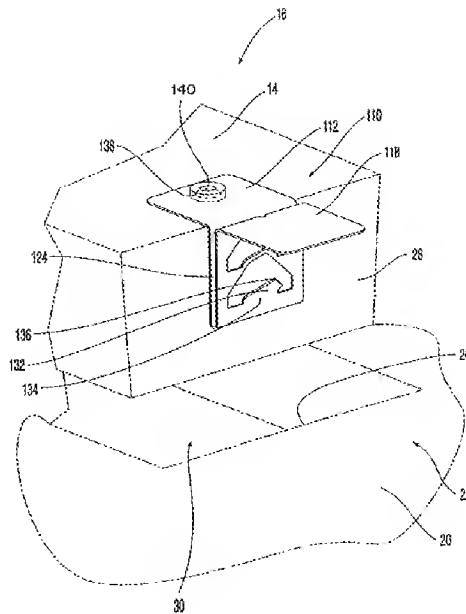


FIG. 3

“FIG. 3 is a perspective view of a second embodiment of a cranial spring clip according to the present invention” (Manthrop, col. 2, ll. 30-31).

3. Manthrop discloses a support element where the flap clipping portion 112 and the skull clipping portion 118 have an upper and lower side (*see* Manthrop, fig. 3).

4. Manthrop discloses an extension 124 which extends substantially at a right angle from the lower side of the support element (*see* Manthrop, fig. 3).

5. Manthrop discloses a spike 136 with burrs 132 which extends substantially parallel to the support element (*see* Manthrop, fig. 3). We find that the burrs are “substantially parallel” since in figure 3, the support element is plate 118 which is perpendicular to extension 124 and the burrs 132 are also “substantially” perpendicular to extension 124 (*see* Manthrop, fig. 3). We find that two “substantially” perpendicular extensions from the

same extension are reasonably interpreted as “substantially” parallel to one another (*see* Manthrop, fig. 3).

6. Appellants’ Specification teaches that “the spike may also be inclined relative to the support element, so long as the spike can be driven in to a sufficient depth” (Spec. 4:17-19). Appellants’ Specification also teaches that the “extension expediently forms an angle of between 45° and 135° with the implant element” (Spec. 4:27-28).

7. Manthrop teaches that the “tips **136** penetrate side surface **26** of skull **22**” (Manthrop, col. 3, ll. 40-41).

8. Manthrop discloses a support element which comprises two support arms, flat clipping portion **112** and skull clipping portion **118**, that extend in opposite directions from the extension **124**, where “[f]lap clipping portion **112** is provided with a fastening element . . . one example of the fastening element: a fastener hole **138** for receiving a fastener, such as a screw **140**” (Manthrop, col. 3, ll. 45-48; fig. 3).

9. Manthrop teaches that “skull clipping portion **118** protrude above top surface **14** of flap **16** and top surface **20** of skull **22**” to cooperate with the bone cover when driving the spike laterally into the bone cover (Manthrop, col. 3, ll. 52-54).

10. The word “spike” is defined as a “long, thick, sharp-pointed piece of wood or metal.”<sup>1</sup>

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<sup>1</sup> Webster’s II New Riverside University Dictionary 1119 (1984).



*A. Discussion of 35 U.S.C. § 103(a) rejection over Manthrop*

*Claim 1*

Manthrop teaches an implant for attaching a bone flap to a skull (FF 1) comprising a support element with an upper and lower side and an extension at a right angle from the support element (FF 2-4). Manthrop further teaches a spike “substantially” parallel to the support element (FF 5-7). Manthrop teaches that the support element arms extend in the opposite direction from the extension where a first support arm has a screw hole (FF 8) and where the second support arm cooperates with the bone flap when the spike is driven into the bone (FF 9).

“[W]hen the question is whether a patent claiming the combination of elements of prior art is obvious”, *KSR* answers that “a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.” *KSR Int’l. Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740 (2007).

Analyzing the structure of claim 1 in the light of *KSR*, we agree with the Examiner that the implant device of claim 1 is obvious over Manthrop (FF 1-9).

We are not persuaded by Appellants’ argument that “implant 110 does not include a spike extending **substantially parallel to the support element for driving laterally into the bone flap 16 in combination with a screw hole in the skull clipping portion 118 for receiving a fastener to secure the skull clipping portion 118 to the skull** as required by claim 1” (App. Br. 6). In fact, implant 110 of Manthrop includes a burr 132 with tips 136 which penetrate the skull (*see* Manthrop, col. 3, ll. 37-40).

Our mandate is to give claims their broadest reasonable interpretation. *See, e.g., In re Hyatt*, 211 F.3d 1367, 1372 (Fed. Cir. 2000) (“[D]uring examination proceedings, claims are given their broadest reasonable interpretation consistent with the specification.”). In *Trans Texas Holdings*, the Federal Circuit provided a clear description of how to construe claims, noting

In *Phillips*, we held that while “the specification [should be used] to interpret the meaning of a claim,” courts must not “import[ ] limitations from the specification into the claim.” *Id.* at 1323. We specifically noted that it is improper to “confine the claims to th[e] embodiments” found in the specification, as *Trans Texas* asks us to do.

*In re Trans Texas Holdings Corp.*, 498 F.3d 1290, 1299 (Fed. Cir. 2007). The Federal Circuit noted that “[u]nder *Phillips*, dictionary definitions are also pertinent. *See id.* at 1318 (‘[T]he court has observed that dictionaries ... can be useful in claim construction.’).” *Id.* Appellants’ Specification recognizes that the “spike can be designed in various ways. Thus, it is possible . . . to provide a spike in the form of one or more spurs or a saw tooth structure” (Spec. 6:9-12). The dictionary defines the term “spike” as a long sharp pointed piece of metal (FF 10). We think that the pointed burr of Manthrop, intended to penetrate the skull bone (FF 7), reasonably satisfies the limitation of a “spike” as broadly interpreted in view of the discussion in Appellants’ Specification and the ordinary meaning of the term as shown by the dictionary definition.

Appellants then argue that the “burrs 132 cannot extend substantially parallel to the support element . . . . If they did, they would not provide the

gripping force required for the ‘snap-fit’ engagement” (App. Br. 6). We are not persuaded by this argument since we agree with the Examiner regarding the angle of the burrs 132 that “it would have been obvious to one having ordinary skill . . . to reach the 90 degrees angle, since . . . discovering the optimum or workable ranges involves only routine skill in the art” (Ans. 4). We find that an ordinary practitioner would have reasonably adjusted the angles of the burrs in order to optimize the clip function dependent upon the specific angles of the skull region being joined. *See In re Boesch*, 617 F.2d 272, 276 (CCPA 1980). (“[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art.”)

*Claim 44*

We are not persuaded by Appellants’ argument that “Manthrop . . . does not disclose, teach, or suggest **driving a spike laterally into the bone flap 16 and securing the skull clipping portion 118 to the skull 22 after driving the spike laterally into the bone flap 16 and after positioning the bone flap 16 adjacent to the skull 22**” (App. Br. 9). Appellants rely upon the order of operation of steps. However, “[u]nless the steps of a method actually recite an order, the steps are not ordinarily construed to require one.” *Interactive Gift Express, Inc. v. CompuServe Inc.*, 231 F.3d 859, 875 (Fed. Cir. 2000). Moreover, “[t]he transition ‘comprising’ in a method claim indicates that the claim is open-ended and allows for additional steps.” *Invitrogen Corp. v. Biocrest Mfg., L.P.*, 327 F.3d 1364, 1368 (Fed. Cir. 2003).

We agree with the Examiner that the method steps “would have been obviously carried out in the operation of the device” (Ans. 4). Manthrop clearly requires that the burr is driven laterally into the bone (FF 7) and requires that the device be secured to the skull (FF 8). The only issue is whether the order of steps in claim 44 represents an unobvious selection based upon the prior art. Appellants present no evidence or argument that the selection is unobvious, only that the exact order is not taught (*see* App. Br. 9). Since we find that the Examiner has reasonably shifted the burden of obviousness to Appellants, and Appellants have not provided any reason or evidence showing criticality of the order of steps, we conclude that claim 44 is obvious over the disclosure in Manthrop.

We affirm the rejection of claims 1 and 44 over Manthrop under 35 U.S.C. § 103(a). Pursuant to 37 C.F.R. § 41.37(c)(1)(vii)(2006), we also affirm the rejection of claims 6, 10, 11, 29-31, and 38-41 under § 103(a), as these claims were not argued separately.

*B. 35 U.S.C. § 103(a) rejection over Manthrop and Hair*

Claim 5 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Manthrop and Hair. The Examiner argues that “Manthrop . . . did not teach of a lower side of the support having a concave or spherically curved . . . . Hair evidences the use of a fastener having a concave or spherically curved lower side to tightly engage the outer surface of the bone and promote gripping action” (Ans. 5).

Appellants argue that “there is no teaching, suggestion, or motivation for these references to be properly combined to establish a *prima facie* case of obviousness” (App. Br. 7). Appellants further contend that “these

references teach away from one another and lack any motivation, teaching, or suggestions to be combined” (*id.*)

In view of these conflicting positions, we frame the obviousness issue before us as follows:

Would it have been obvious to modify the implant of Manthrop to curve the support element as shown in the implant of Hair?

*Findings of Fact*

11. Hair teaches that “the top flange **50** in the pre-use state . . . is preferably slightly curved downwardly so as to be a portion of a cylinder” (Hair, col. 3, ll. 40-42).

12. Hair teaches that a “tighter gripping action for this installed, or use state, condition may be achieved by configuring the bottom surface **54** of the top flange **50** with a downwardly curving profile” (Hair, col. 4, ll. 33-36).

*B. Discussion of 35 U.S.C. § 103(a) rejection over Manthrop and Hair*

In *KSR Int’l v. Teleflex*, the Supreme Court rejected the rigid teaching, suggestion and motivation test upon which Appellants rely, indicating that “[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability.” *KSR*, 127 S. Ct. at 1740.

In our opinion, the combination of a curved support element as taught by Hair for tighter gripping action in a skull clamp (FF 11-12) with the skull clip of Manthrop provides a specific reason to modify the skull clip of Manthrop to be curved. Such a combination is merely a “predictable use of

prior art elements according to their established functions.” KSR, 127 S. Ct. at 1740.

We are also not persuaded by Appellants’ argument that because Manthrop and Hair are drawn to different types of implants, the use of a feature from Hair in the device of Manthrop constitutes a teaching away. Like our appellate reviewing court, “[w]e will not read into a reference a teaching away from a process where no such language exists.” *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1364 (Fed. Cir. 2006).

We affirm the rejection of claim 5 under 35 U.S.C. § 103(a) over Manthrop and Hair.

*C. 35 U.S.C. § 103(a) rejection over Manthrop and Pohndorf*

In addition to Manthrop, the Examiner relies upon Pohndorf to support his 35 U.S.C. § 103(a) rejection of claims 10 and 11. These claims address limitations regarding the screw hole.

Appellants do not argue these specific limitations are missing from the prior art teachings but rather relies upon his prior arguments relating to the obviousness rejection over Manthrop. Thus, we affirm the 35 U.S.C. § 103(a) rejection of claims 10 and 11 for the reasons given above.

## CONCLUSION

In summary, we affirm the rejection of claim 1 and 44 over Manthrop under 35 U.S.C. § 103(a). Pursuant to 37 C.F.R. § 41.37(c)(1)(vii)(2006), we also affirm the rejection of claims 6, 10, 11, 29-31, and 38-41 under § 103(a), as these claims were not argued separately. We also affirm the

Appeal 2008-4990  
Application 09/921,233

rejection of claim 5 under 35 U.S.C. § 103(a) over Manthrop and Hair. We also affirm the 35 U.S.C. § 103(a) rejection of claims 10 and 11 over Manthrop and Pohndorf.

AFFIRMED

cdc

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